

1 WHAT IS CLAIMED IS

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1. A semiconductor device which allows an input signal thereto to select one of N operation modes, and operates in said one of N operation modes, said semiconductor device comprising:

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a selection circuit for selecting an operation mode from said N operation modes when said input signal indicates said operation mode, and for selecting a predetermined operation mode from said N operation modes when said input signal is an undefined signal indicating none of said N operation modes; and
an internal circuit operating in an operation mode selected by said selection circuit.

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2. The semiconductor device as claimed in claim 1, wherein said selection circuit comprises:

a first circuit for selecting one of predetermined N-1 operation modes among said N operation modes by decoding said input signal; and

a second circuit for selecting, based on logic operation of outputs of said first circuit, a remaining operation mode of said N operation modes when none of said ^{predetermined} N-1 operation modes is selected.

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3. The semiconductor device as claimed in claim 2, wherein said selection circuit further comprises N-1 signal lines connecting between said

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1 first circuit and said second circuit, and said second
circuit is located in a proximity of said internal
circuit or within said internal circuit.

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4. The semiconductor device as claimed in
claim 1, wherein said selection circuit comprises:

10 a third circuit for detecting said undefined
signal;

a fourth circuit, responsive to an output
from said third circuit, for storing said input signal
when said input signal is not said undefined signal,
15 and for holding a currently stored input signal when
said input signal is said undefined signal; and

a fifth circuit for selecting one of said N
operation modes by decoding said input signal stored in
said fourth circuit.

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5. A semiconductor device which allows an
25 input signal thereto to select one of N operation
modes, and operates in said one of N operation modes,
said semiconductor device comprising:

a selection circuit for selecting an
operation mode from said N operation modes when said
input signal indicates said operation mode, and for
30 selecting a predetermined operation mode from said N
operation modes when said input signal is an undefined
signal indicating none of said N operation modes;

a core circuit for storing data; and
35 a control circuit operating in an operation
mode selected by said selection circuit to control said
core circuit.

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1 6. The semiconductor device as claimed in
claim 5, wherein said selection circuit comprises:
 a first circuit for selecting one of
predetermined N-1 operation modes among said N
5 operation modes by decoding said input signal; and
 a second circuit for selecting, based on
logic operation of outputs of said first circuit, a
remaining operation mode of said N operation modes when
none of said ^{predetermined} N-1 operation modes is selected.

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15 7. The semiconductor device as claimed in
claim 6, wherein said selection circuit further
comprises N-1 signal lines connecting between said
first circuit and said second circuit, and said second
circuit is located in a proximity of said ^{control} ~~internal~~
20 circuit or within said ^{control} ~~internal~~ circuit.

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25 8. The semiconductor device as claimed in
claim 5, wherein said selection circuit comprises:
 a third circuit for detecting said undefined
signal;

 a fourth circuit, responsive to an output
from said third circuit, for storing said input signal
30 when said input signal is not said undefined signal,
and for holding a currently stored input signal when
said input signal is said undefined signal; and

 a fifth circuit for selecting one of said N
operation modes by decoding said input signal stored in
35 said fourth circuit.

1 9. A method of selecting one of a plurality
of operation modes in a semiconductor device by using
an input signal, said method comprising the steps of:
 selecting an operation mode from said
5 plurality of operation modes when said input signal
indicates said operation mode; and
 selecting a predetermined operation mode from
said plurality of operation modes when said input
signal is an undefined signal indicating none of said
10 plurality of operation modes.

15 10. A method of selecting one of N operation
modes in a semiconductor device by using an input
signal, said method comprising the steps of:
 selecting one of predetermined N-1 operation
modes among said N operation modes by decoding said
20 input signal; and
 selecting a remaining operation mode of said
N operation mode when none of said N-1 operation modes
is selected.

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 11. A method of selecting one of a plurality
of operation modes in a semiconductor device by using
30 an input signal, said method comprising the steps of:
 detecting whether said input signal is an
undefined signal indicating none of said plurality of
operation modes;
 storing said input signal to a register when
35 said input signal is not an undefined signal;
 holding said input signal currently stored in
said register when said input signal is an undefined

1 signal; and

selecting one of said plurality of operation
modes by decoding said input signal stored in said
register.

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